

ICEYE

A REVOLUTION IN SYNTHETIC APERTURE RADAR (SAR) DATA EARTH OBSERVATION

SIMPLE ACCESS TO GLOBAL, HIGH-RESOLUTION SAR DATA
TO MEET YOUR DEMANDING NEEDS

Q2 2022



TABLE OF CONTENTS

Executive Summary	3
Proven Satellite Launches	5
A Revolutionary SAR Satellite Design	6
Versatile Imaging Modes	7
More Satellites, More Coverage	8
Typical Data Solution	14
Why ICEYE?	15



PORT OF NAGOYA, JAPAN

IMAGE MODE: SPOT EXTENDED AREA @ 1 M X 1 M RESOLUTION, TAKEN ON 25-11-2021 AT 05:28 UTC.

EXECUTIVE SUMMARY – WELCOME TO A NEW ERA IN SAR

Spaceborne Earth observation has been well established for decades, with synthetic aperture radar (SAR) satellites being the gold standard due to their ability to collect images from areas of interest day and night and in any weather. Traditional SAR satellites are very large and carry very large antennas with limited revisit frequency and flexibility.

Only ICEYE's small and agile SAR satellites are able to revisit the same location on Earth daily and even sub-daily, enabling a completely new level of change detection. ICEYE's large commercial constellation of SAR satellites now makes it possible for governments and commercial organizations to acquire data on any location on Earth – any time they need it, with very high resolution, high frequency revisits, and at an affordable price. A new era in SAR is being pioneered by ICEYE.

GAME-CHANGING TECHNOLOGY

Our unique antenna is designed to enable an unprecedented range of operational approaches. Our Spot, Strip, and Scan modes allow us to move quickly and easily between scanning areas up to 10,000 km² in area in lower resolution and zooming into areas at much higher resolution.

OPERATIONALLY PROVEN

With the world's largest SAR constellation, ICEYE delivers unlimited global access and the highest frequency revisits on the market – measured in hours instead of days. We've launched over 20 satellites since 2018 with 10+ more planned for 2022 and beyond, enabling even faster and more frequent access and allowing SAR to be used in ways that have never been possible. We have already provided 35,000+ images to government and commercial clients across the globe.

THE ONLY READY-MADE SPACECRAFT SOLUTION

In addition to delivering data, we are also the only organization in the world to offer governments and organizations the chance to buy high-precision SAR satellites straight from our own production line. ICEYE is the only organization in the world today able to deliver this kind of groundbreaking and proven capability.

“Your turnaround is fantastic.”

NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

REGARDING ICEYE'S RESPONSE TO HISTORIC FLOODING IN THE U.S.

“Your images are works of art!”

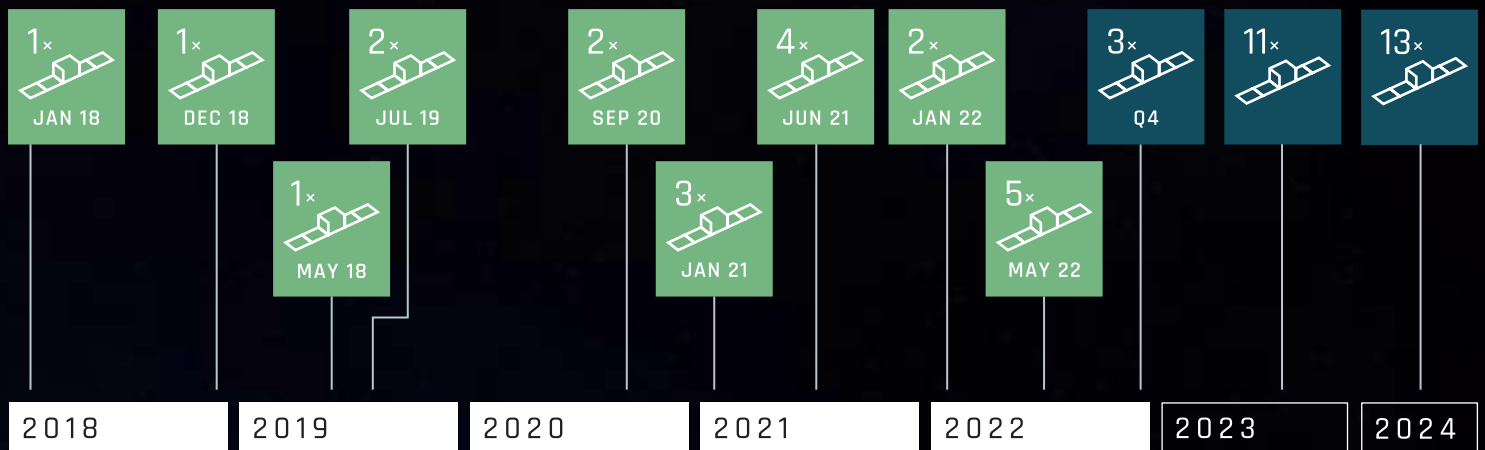
UNITED STATES NAVY

REFERENCING ICEYE SAR COLLECTIONS IN SUPPORT OF A MILITARY
DEMONSTRATION IN 2021.



PROVEN SATELLITE LAUNCHES AND MORE TO COME

- 20+ satellites successfully launched since 2018
- 10+ more to be launched in 2022 and beyond
- Future developments planned for 2023 and beyond

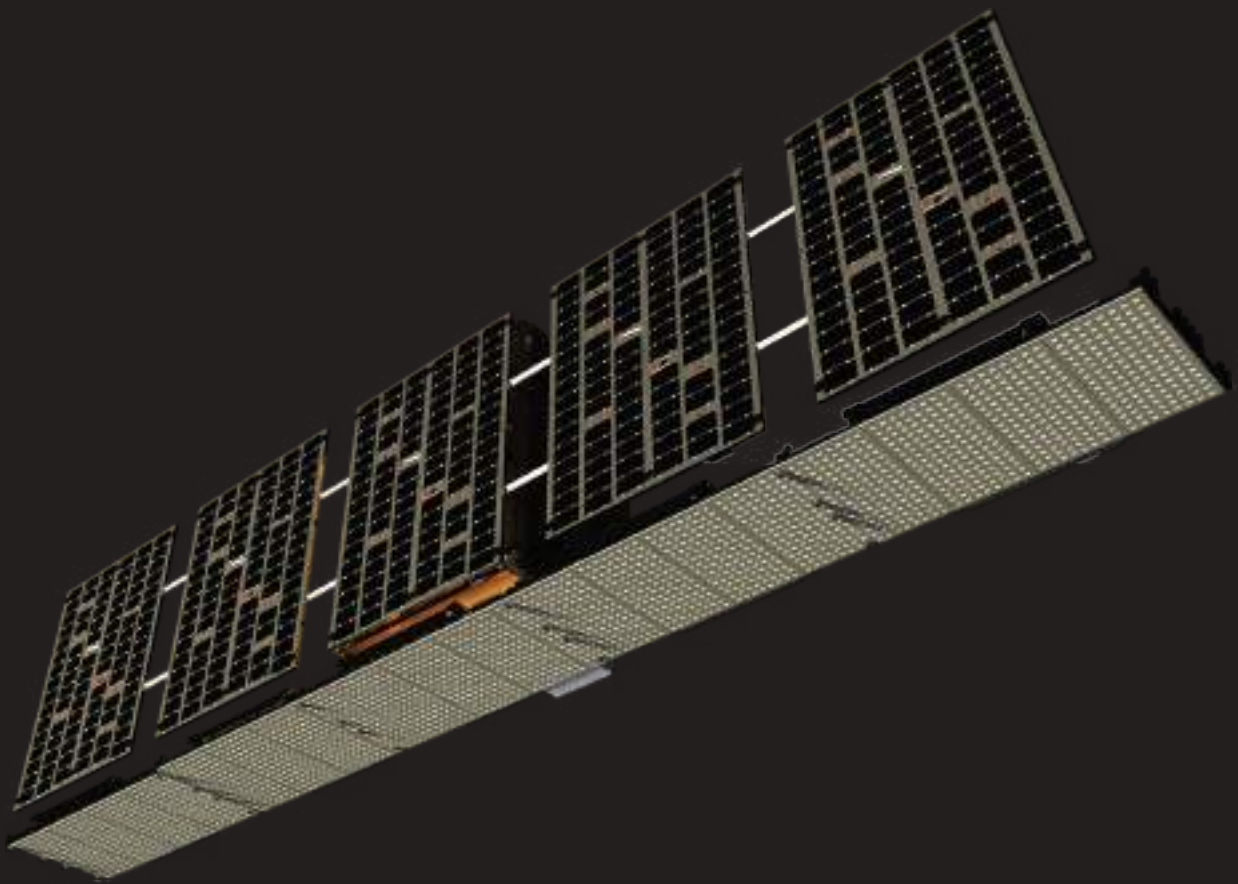


A REVOLUTIONARY SAR SATELLITE DESIGN

ICEYE satellites are designed to deliver high-performance persistent monitoring capabilities at a significantly lower weight and cost than traditional SAR satellites. With the unique combination of a miniaturized SAR sensor payload integrated onto a high-performance lightweight platform, ICEYE satellites deliver a level of performance that has never been possible before.

The design enables long imaging dwell times at extremely high resolution and the ability to flexibly maneuver the antenna and scan the radar beam across wide areas. This enables ICEYE to deliver multiple imaging modes that enable the broadest possible range of operational applications.

The engineering breakthroughs we've made have significantly reduced the weight, manufacturing time and cost of our satellites compared to the traditional approach, enabling governments, organizations and commercial companies to use SAR data in ways that have been impossible until now.



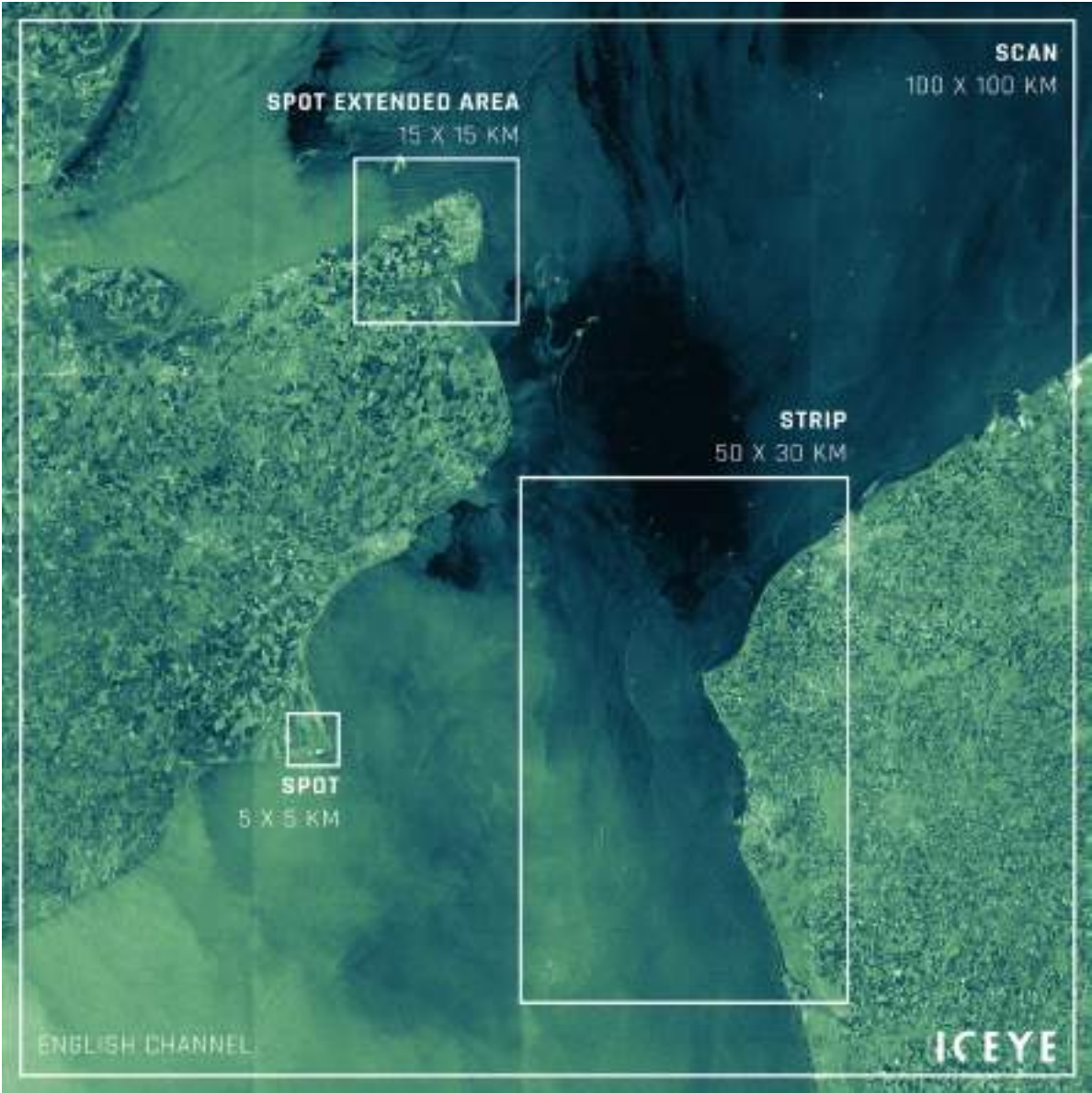
AN ARTIST'S DEPICTION OF AN ICEYE NEW SPACE SAR SATELLITE.

ICEYE’S UNIQUE ANTENNA IS AN ELECTRONICALLY-STEERED PHASED ARRAY THAT CAN BE CONTROLLED TO ENABLE A RANGE OF IMAGING MODES FOR DEMANDING OPERATIONAL NEEDS.

ICEYE SAR IMAGING MODES:

UP TO 25 CM RESOLUTION.

UP TO 10,000 KM² SCENE SIZE.



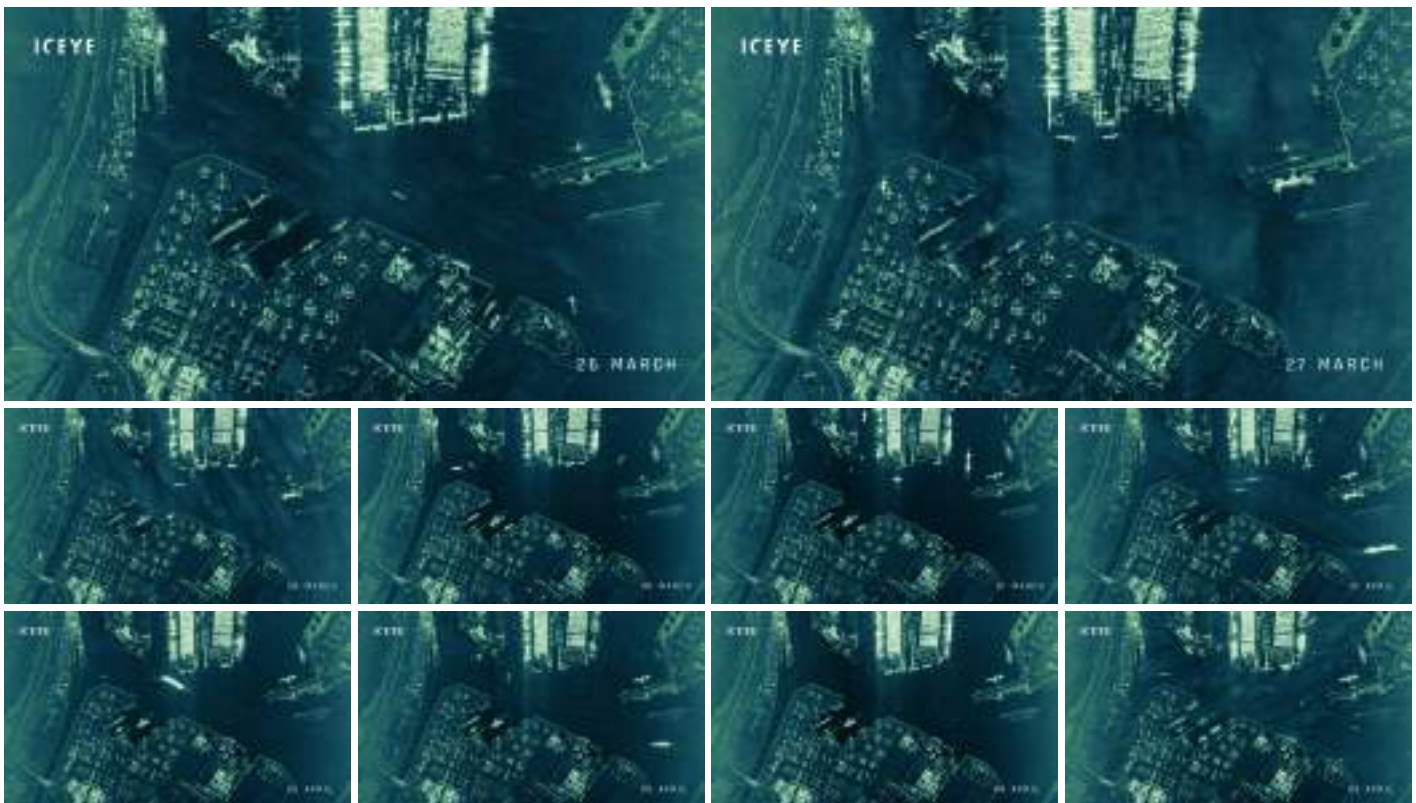
IMAGING MODE	UNITS	STRIP	SPOT	SLEA	SCAN
NOMINAL SWATH WIDTH X LENGTH	KILOMETERS	30 X 50	5 X 5	15 X 15	100 X 100
NOMINAL COLLECTION DURATION	SECONDS	10	10	10	15
SINGLE LOOK SLANT RANGE RESOLUTION	METERS	0.5 TO 2.5	0.5	0.5	N/A
SINGLE LOOK AZIMUTH RESOLUTION	METERS	3	0.25	1	N/A
GROUND RANGE RESOLUTION	METERS	3	1	1	15
GROUND AZIMUTH RESOLUTION	METERS	3	1	1	15
RANGE LOOKS		1	1 TO 2	1 TO 2	1
AZIMUTH LOOKS		1 TO 2	4	1	1
INCIDENCE FOR NOMINAL PERFORMANCE	DEGREES	15 - 30	20 - 35	20 - 35	21 - 29
NESZ	DB	<-21.5 TO -20	-18.5 TO -15	-18.5 TO -15	-22.2 TO -21.5
MAXIMUM IMAGE DURATION	SECONDS	72	10	10	75
MAXIMUM IMAGE LENGTH	KILOMETERS	500	N/A	N/A	500

MORE SATELLITES, MORE COVERAGE

ICEYE runs the largest operational SAR satellite constellation in the world with the largest number of satellites. This enables capabilities like Daily Coherent Ground Track Repeat (GTR) and Persistent Monitoring, a capability that hasn't been possible before.

VERY FREQUENT REVISIT

For the first time, it is now possible to persistently monitor an area of interest (AOI) every 24 hours. This is only possible because ICEYE's constellation has a high enough number of satellites in the precise orbits needed to achieve this world-first.



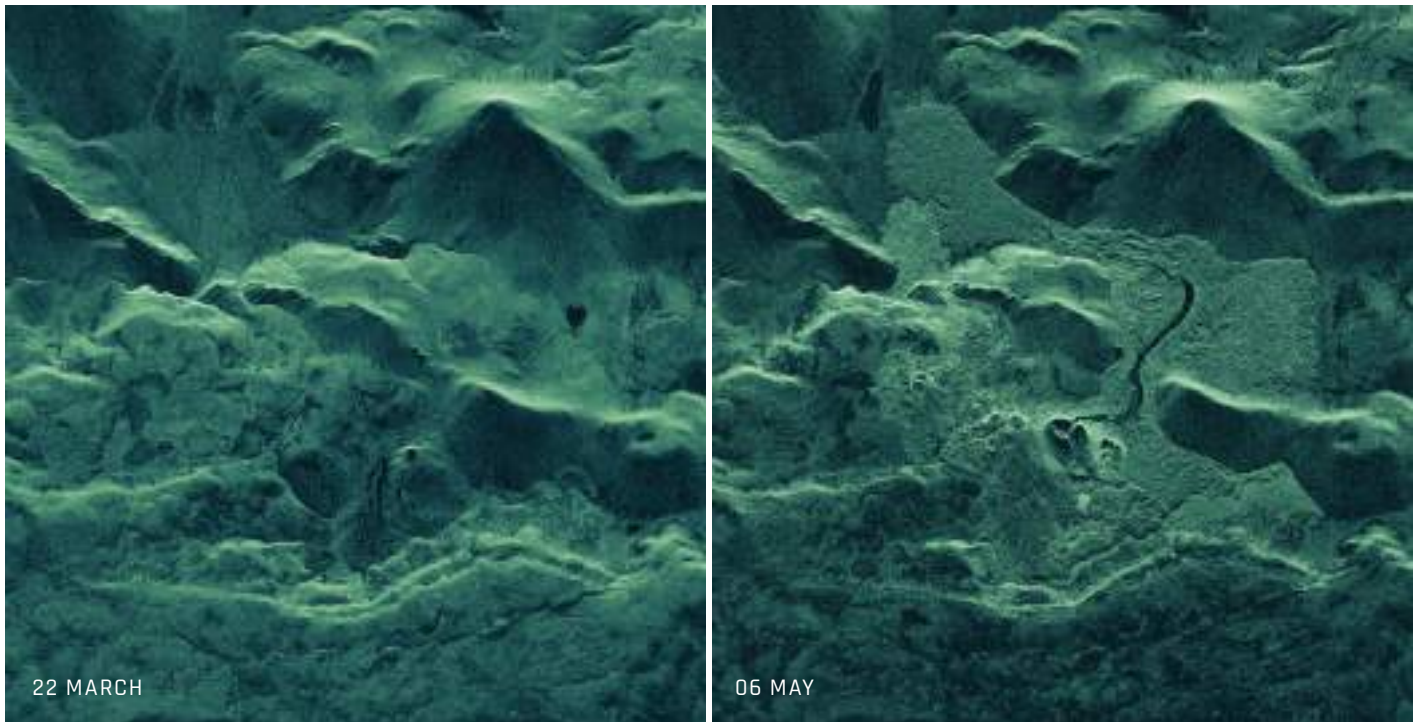
PORT OF ROTTERDAM, NETHERLANDS

SHOWS 10 OF A 58 DAY COHERENT IMAGE STACK USING SPOT IMAGING MODE @ 0.5 M X 0.25 M RESOLUTION, TAKEN BETWEEN 26-03-2021 AND 05-04-2021.

MORE SATELLITES, MORE COVERAGE

VERY PRECISE CHANGE DETECTION

Utilizing change detection techniques, it's possible to identify highly accurate ground change every 24 hours, including things like movement of a vehicle along a track or lava flow during a volcano eruption. Each image in a stack has the exact same geometry, radiance and phase, which enables millimeter-level change detection.



FAGRADALSFJALL VOLCANO ERUPTION, ICELAND

A COMPARISON BETWEEN TWO ICEYE SAR SATELLITE IMAGES OF THE ERUPTING FAGRADALSFJALL VOLCANO IN ICELAND, ACQUIRED ON MARCH 22 AND MAY 6, 2021, USING SPOT MODE 0.5 M X 0.25 M. SEE HOW THE LANDSCAPE NEAR THE ERUPTING FAGRADALSFJALL VOLCANO HAS CHANGED, FORMED BY THE SPREAD OF LAVA.

MORE SATELLITES, MORE COVERAGE

VERY HIGH RESOLUTION

ICEYE's high-performance SAR satellites are capable of imaging below 1 meter resolution in Spot mode, which allows you to identify objects like vehicles and vessels. This capability is available in a 5 x 5 km scene size or at 15 x 15 km, which is the largest high-resolution scene available anywhere in the world. And Strip mode at 3 m resolution and Scan mode at 15 m resolution are also available if greater image area is required at high resolution.



EVERGIVEN SHIP, SUEZ CANAL, EGYPT

IMAGE MODE: SPOT @ 0.5 M X 0.25 M RESOLUTION, TAKEN ON 25-03-2021 AT 19:58 UTC DURING NIGHTTIME.

MORE SATELLITES, MORE COVERAGE

POSSIBLE APPLICATIONS USING SAR DATA

- DEFENCE AND SECURITY
- NATURAL CATASTROPHE ASSESSMENTS
- DARK VESSEL DETECTION
- DEFORESTATION
- OIL SPILL TRACKING
- AND COUNTLESS OTHER APPLICATIONS



EVERGIVEN SHIP, SUEZ CANAL, EGYPT

IMAGE MODE: STRIP @ 3 M X 3 M RESOLUTION, TAKEN ON 24-03-2021 AT 09:37 UTC

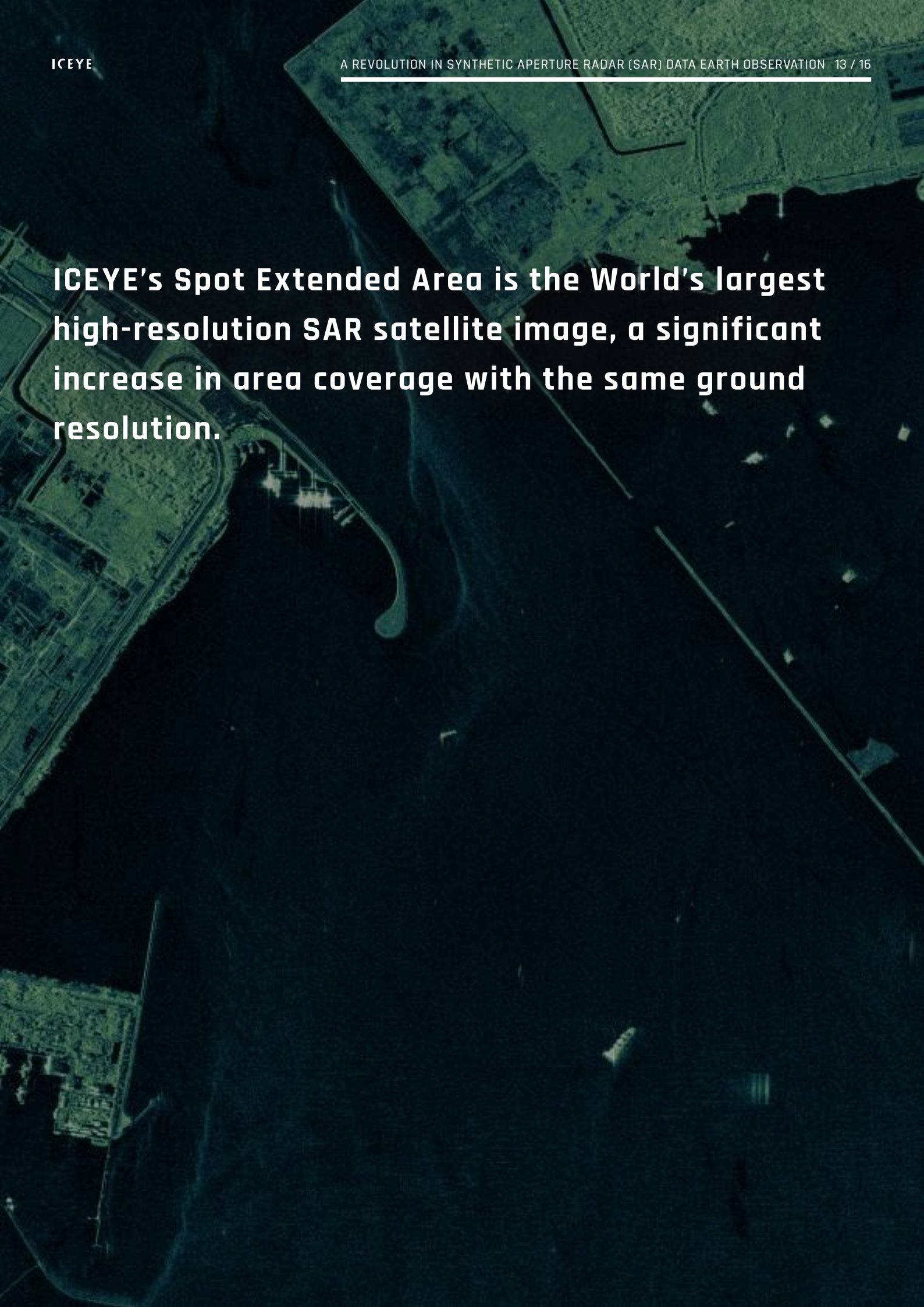
“The ability to persistently monitor locations with SAR means you can now make critical decisions without guessing or hoping to predict an event. Now you know.”

SHAY STRONG

VICE PRESIDENT OF ANALYTICS, ICEYE

CHANGI AIRPORT, SINGAPORE

IMAGE MODE: SPOT EXTENDED AREA @ 1 M X 1 M RESOLUTION, TAKEN ON 24-11-2021 AT 19:19 UTC.



ICEYE's Spot Extended Area is the World's largest high-resolution SAR satellite image, a significant increase in area coverage with the same ground resolution.

TYPICAL DATA SOLUTION

DATA FOR YOUR OPERATIONAL NEEDS

ICEYE's core mission is to make Earth observation with SAR imagery easy and more accessible. We are happy to tailor a package to your operational needs, taking into account the location and size of your AOIs, the frequency and quantity of images you require, image modes, and resolution.

A DATA ORDER COMMITMENT

This gives you the flexibility to request imagery as you need it, choosing various locations, changing resolutions or modes, and drawing images from an agreed repository. The value of this commitment can be sized as you wish, with discounts for larger commitments.

PERSISTENT MONITORING OF ANY AOI

If you need to increase your situational awareness by persistently monitoring a specific AOI or multiple AOIs, day or night and in any weather, we can offer a bespoke quotation for this service.

ARCHIVE IMAGERY

ICEYE has over 30,000 archive images covering locations around the world. The technical characteristics and global coverage of ICEYE products provide extremely valuable inputs for a variety of studies and application developments. The archive data used alongside new imagery is well-suited for things like change detection on the ground, the assessment of damages caused by natural catastrophes, and the monitoring of infrastructure integrity.

Secure the data you want, over the time period & location you want

Regular repeatable monitoring, day or night whatever the weather

WHY ICEYE?

WELCOME TO THE NEW ERA IN SAR

ICEYE has completely revolutionized the use of SAR Earth observation for governments and organizations, offering unprecedented access to critical and timely information on changes and activities. SAR provides highly accurate, reliable, and timely data for a variety of applications on land and at sea, day or night, and in any weather.

THE WORLD'S LARGEST SAR CONSTELLATION

ICEYE operates and will continue to maintain the world's largest operational SAR satellite constellation, giving you unrivalled global access and revisit frequency measured in hours, not days or weeks. Our constellation will soon have at least 18 satellites, giving even faster and more frequent access. No other New Space SAR provider has launched as many satellites, with 10+ more booked for 2022 and beyond.

GROUNDBREAKING TECHNOLOGY

ICEYE's unique ability to make rapid technological advances designed to meet real operational needs has led to the creation of world-first capabilities like our Spot, Strip, and Scan modes, which provide images from 0.25 m resolution to 100 km in width and up to 10,000 km² in area. This flexibility is not possible with other SAR New Space satellite designs.

OPERATIONALLY PROVEN

Sixteen ICEYE satellites have been launched since 2018, and we have operated our commercial constellation since December 2018. We are the only New Space SAR company with such a vast level of proven experience. And we are the only organization in the world with the proven ability to supply new-era Earth observation satellites from our own production line.

If you are interested in procuring ICEYE SAR imagery, please get in contact and we would be happy to provide a solution tailored to meet your needs.

Greater global coverage and revisit frequency

Imaging flexibility for high resolution & wide area

The leading proven SAR provider



ICEYE

SALES@ICEYE.COM

MAARINTIE 6, 02150 ESPOO, FINLAND

WWW.ICEYE.COM